

Begin  
# 634

UMAROV, M.

Some relief features of the lower part of the Zeravshan Valley.  
Izv.Uzb.fil.Geog.ob-va 6:52-59 '62. (MIRA 15:8)  
(Zeravshan Valley—Landforms)

UMAROV, M.

Landforms of the lower Teravshan Valley and prospects for their  
agricultural development. Nauch. trudy TashGU no.451. Trudy  
Nauch.-issl. otd. Geog. fak. no.3:67-72 '64.

(MIRA 18:3)

PEYMER, I.A.; UMAROV, M.B.; KHROMOV, N.A.

Electrophysiological investigations of psychasthenia and hysteria.

Zhur. nevr. i psikh. 54 no.11:903-914 N '54.

(MLRA 8:1)

(HYSTERIA, physiology,  
EEG)

(NEUROSES, OBSESSIVE-COMPULSIVE,  
psychasthenia, EEG)

(ELECTROENCEPHALOGRAPHY, in various diseases,  
hysteria & psychasthenia)

UMAROV, M. U.

"Water and Nutritional Regimes of Irrigated Meadow Soils Under Various Cultivation Conditions." Cand Biol Sci, Central Asia State U, Inst of Soil Sciences, Acad Sci Uzbek SSR, Tashkent, 1953. (RZhBiol, No 3, Oct 54)

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (10)

So: Sum. No. 481, 5 May 55

KIMBERG, N.V.; UMAROV, M.U.

Soil science in Uzbekistan during the past 40 years. Izv. AN Uz.  
SSR. Ser. biol. nauk no.4:57-66 '57. (MIRA 11:9)  
(Uzbekistan--Soil research)

UMAROV, H.U.; RYZHOV, S.N., akademik, otv.red.; TUMASHKIVSKAYA, E.S.,  
red.izd-va; GOR'KOVAYA, Z.P., tekhn.red.

[Water and nutrient balance of irrigated meadow soils under  
various conditions of cultivation] Vodnyi i pitatel'nyi  
rezhimy oroshaemoi lugovoi pochvy razlichnogo kul'turnogo  
sostoiania. Tashkent, Izd-vo Akad.nauk USSR, 1958. 116 p.  
(MIRA 12:9)

1. Akademiya sel'skokhozyaystvennykh nauk UzSSR (for Ryzhov).  
(Soils) (Soviet Central Asia--Irrigation farming)

GUSSAK, V.B.; KIMBERG, N.V.; UMAROV, M.U.; MAKHSUDOV, Kh.M.

Some data on the extent of erosion in Uzbekistan, its aftereffects  
and control measures. Uzb.biol.zhur. no.1:73-81 '59.  
(MIRA 12:7)

1. Institut pochvovedeniye AN UzSSR.  
(Uzbekistan--Erosion)



MERKOV, B.P. (Moskva); GAUER, Z.Ye. (Moskva); KOBKLEV, M.V.; SYCHEV, K.I.  
(Karaganda); UMAROV, M.U. (Moskva); SHUTLIV, F.A., kand.geol.-  
mineral.nauk

News, events, facts. Priroda no.12:99-109 D '62.

(MIRA 15:12)

1. Donetskaya geologicheskaya partiya, Novo-Troitskoye, Donetskaya  
obl. (for Kobelev). 2. Tsentral'nyy sovet Vserossiyskogo obshchestva  
okhrany priroda, Moskva (for Shutliv).  
(Science news)

GENUSOV, A.Z.; KIMBERG, N.V.; UMAROV, M.U.

First International Seminar on the Classification and Mapping of  
Soils of Asia. Pochvovedenie no.2:108-110 F '63. (MIRA 16:3)  
(~~Asia--Soils--Maps~~) (Asia--Soils--Classification)

UMAROV, M.U. (Samarkand)

Irrigation farming in the lower reaches of the Zeravshan. Priroda 53 no.1:  
114-117 '64. (MIRA 17:2)

KOVDA, V.A., otv. red. LOBOVA, Ye.V., doktor sel'khoz. nauk,  
otv. red. (Moskva); ZIMBERG, N.V., red. (Tashkent);  
MAMYTOV, A.B., red. (Frunze); UMAROV, M.U., red.

[Geography and classification of the soils of Asia]  
Geografiia i klassifikatsiia pochv Azii. Moskva,  
Nauka, 1965. 257 p. (MIRA 18:8)

1. Akademiya nauk SSSR. Pochvennyy institut im. V.V.  
Dokuchayeva. 2. Chlen-korrespondent AN SSSR (for Kovda).

UMAROV, S.

Meat industry of Uzbekistan. Mias. ind. SSSR 27 no.1:30-33 '56.  
(MLRA 9:6)

1. Ministr promyshlennosti myasnykh molochaykh produktov Uzbek-  
skoy SSR.  
(Uzbekistan--Meat industry)

UMAROV, S.

Commercial fattening of livestock in Uzbekistan. Mias.ind.:SSSR 27  
no.2:39-42 '56. (MLRA 9:8)

1. Ministr promyshlennosti myasnykh i molochnykh produktov  
→ Uzbekskoy SSR.  
(Uzbekistan--Swine--Feeding and feeding stuffs)

UMAROV, S.; IVANOV, I.; SOBOLEV, A.; KRASNOV, V.; VASILEVSKIY, I.;  
 POTAPKIN, I.; IL'ICHEV, N.; PIZENGOL'TS, M.; SOKRATOV, K.;  
 CHURSIK, A.; KAUGER, V.; VOLOVODOV, A.; BAZARYA, M.

Issuing credit to collective farms should be equal to the  
 standard of the new tasks. Den. 1 kred. 16 no.4:3-26 Ap '58.  
 (MIRA 11:5)

1. Upravlyayushchiy Uzbekskoy kontoroy Gosbanka (for Umarov).
2. Zamestitel' upravlyayushchego Rostovskoy oblastnoy kontoroy Gosbanka (for Ivanov).
3. Upravlyayushchiy proizvodstvenno-ekspluatatsionnogo otdela Sakhalinskoy oblastnoy kontoroy Gosbanka (for Sobolev).
4. Nachal'nik proizvodstvenno-ekspluatatsionnogo otdela Sakhalinskoy oblastnoy kontoroy Gosbanka (for Krasnov).
5. Zamestitel' upravlyayushchego Belorusskoy respublikanskoy kontoroy Gosbanka (for Vasilevskiy).
6. Nachal'nik otdela kreditovaniya sel'skogo khozyaystva i zagotovok Ukrainskoy respublikanskoy kontoroy Gosbanka (for Potapkin).
7. Upravlyayushchiy Mordovskoy respublikanskoy kontoroy (for Il'ichev).
8. Starshiy prepodavatel' Voronezhskogo sel'skokho zaystvennogo instituta (for Pizengol'ts).
9. Saratovskiy ekonomicheskij institut (for Sokratov).
10. Upravlyayushchiy Sovetskim otdeleniyem Gosbanka Krasnodarskogo kraya (for Chursin).
11. Upravlyayushchiy Gorodishchenskimi otdeleniyem Gosbanka Penzenskoy oblasti (Kauger).
12. Upravlyayushchiy Zherdevskim otdeleniyem Gosbanka Tambovskoy oblasti (for Volovodov).
13. Nachal'nik Upravleniya sel'skogo khozyaystva i zagotovok Gosbanka (for Bazarya) (Agricultural credit)

UMAROV, S.; KNIVA, A.; KOROBKOV, N.; CHESALIN, I.

Organization of currency circulation in economic regions. Den.1  
kred. 17 no.5:8-19 My '59. (MIRA 12:10)

1. Upravlyayushchiy Uzbekskoy respublikanskoy kontoroy Gosbanka  
(for Umarov). 2. Upravlyayushchiy Litovskoy respublikanskoy  
kontoroy Gosbanka (for Kniva). 3. Upravlyayushchiy i nachal'nik  
otdela deneshnogo obrashcheniya Moskovskoy oblastnoy kontoroy  
Gosbanka (for Korobkov, Chesalin).  
(Money)



UMAROV, S.E.

One atypical hallucinative phenomenon in acute alcoholic  
psychoses. Trudy Dush. med. inst. 61:79-88 '63. (MIRA 17:5)

2

UMAROV, S. U.

Mr., Academy of Sciences of Uzbek SSR

"Central Asia State University", Biul. Sredneaz. un., no. 25, 1947

UMAROV, S. U.

Umarov, S. U. "On Louisville's theorem for system with anisotropic phase space," Trudy Fiz,-tekh. in-ta (Akad. nauk Uzbek. SSR), Vol II, Issue 2, 1949, p. 5-13

SO: U-5241, 17 December 1953, (Letopis 'Zhurnal 'nykh Statey, No. 26, 1949)

UMAROV, S.U.; LEVASHOV, A.Ye.

Gibbs distribution and systems not reduced to normal conditions.  
Trudy FTI AN Uz SSSR 3:5-12 '50. (MIRA 11:4)

1. Deystvitel'nyy ohlen AN UzSSR (for Umarov).  
(Statistical mechanics)

UMAROV, S. T., AKADEMICH, G. S., KERVICH, L. V.

"Secondary Electron Paths in a Metal and a Dielectric, Related to Electron Collisions"

Tr. Fiz. Tekh. Inst. Ak. Nauk SSSR, 5, 1955, pp 3-25

Energy losses of secondary electrons in a metal and a dielectric are computed, in relation to electron collisions, in classical approximation, agreeing within certain limits with quantum mechanical computation. The electron gas in a metal is considered to obey Fermi's statistics. Numerical values of free paths are obtained by means of substitution in the expressions of energy losses of numerical values of work function, internal potential, breadth of forbidden zone and approximate integration. (Akad. No 2, 1955)

SO: Sum. 492, 12 May 55

UMAROV, S. U.

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EL

Angular distribution of reflected ions. S. U. Umarov, O. M. Ayak'ants, and L. G. Gurevich. Doklady Akad. Nauk USSR. S.S.R. 1953, No. 0, 13-17; Referat. Zhur., Fiz. 1953, No. 7312. --A theoretical study of the distribution function according to angles and energy of ions which are reflected from the surface of a solid substance. It is assumed that the dispersion of an ion upon an atom is isotropic and that the extent of the dispersion does not depend upon the energy of the ion. A group of falling ions is normal toward the surface of a metal. In order to calc. the numerous dispersions which are possible, the unknown function of probability for distribution of the ions according to angles and energy can be expressed in the form:  $F(\theta, E) = \sum_{n=1}^{\infty} \psi_n(\theta) \psi_n(E)$ . Here  $\psi_n(\theta)$  is the probability of the ion's departure from the target at an angle  $\theta$  after  $n$  collisions,  $\psi_n(E)$  is the probability that energy of the ion after  $n$  collisions lies between  $E$  and  $E + dE$ . A calcn. of the function of  $\psi_n(\theta)$  is made for single, double, and triple dispersions, and then a general expression for  $\psi_n(\theta)$  is given.

Marjorie Ketner

UMAROV, S. U.

✓ Distribution of reflected ions according to energy. S. U.

Umarov, G. M. Avak'yants, and L. G. Gurvich. *Doklady*

*Akad. Nauk Uzbek. S.S.R.* 1955, No. 8, 23-7; *Refer.*

*Zhur.*, *Fiz.* 1955, No. 7313.—A method is given for calcg.

the distribution according to energy of ions reflected from

the surface of a solid substance. For a single collision of

an ion with a surface atom, the distribution function for

reflected ions according to angles has a delta-like nature.

One energy value for the reflected ion corresponds to each

angle of reflection. For a double collision, the distribution

function loses the delta-like nature. A great no. of energy

values for the reflected ion correspond to a single value for

the angle of reflection. One and the same energy value for

the reflected ion can be observed for the entire interval of

reflection angles, but with different probability. Cf. preced-

ing abstr.

Marjorie Ketner

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UMAROV, S. U., and Gurvich, L. G.

"Contact Theory Metal-Semiconductor"  
Dokl, AN UzSSR, No 11, 1954, 3-8

The volt-ampere characteristic of the contact metal-semiconductor is computed by simultaneous solution of Poisson's equation and the equation of diffusion. At variance with works by S. I. Pekar (ZhETF, 10, 1210, 1940) and W. Z. Schottky (Z. Phys. 118, 539, 1942, the degree of ionization of impurities centers is accounted for. For boundary conditions the current through the contact and the variation of velocity of current carriers under the action of the electric field is taken into account. The condition of high voltage rectification was found to be a strong degree of ionization of impurity centers. (RZhFiz, No 9, 1955)

SO: Sum-No 787, 12 Jan 56



UMAROV, S.U.

Tenth anniversary of the Institute of Physics and Technology.  
Trudy FTI AN Uz. SSR 6:3-19 '55. (MLRA 9:12)

1. Deystv'tel'nyy chlen Akademii nauk Uzbekskoy SSR.  
(Uzbekistan--Physics--Research)

UMAROV, S.U.; GURVICH, L.G.

Theory of metal-semiconductor contacts. Trudy FTI AN Uz. SSR  
(MLRA 9:12)  
6:20-23 '55.

1. Deyatvitel'nyy chlen Akademii nauk Uzbekskoy SSR. (for Umarov).  
(Semiconductors) (Electric current rectifiers)

UMAROV, S. U.

H

USSR / Electronics

Abs Jour : Ref Zhur - Fizika, No 4, 1957, No 9769

Author : Umarov, S.U., Avak'yants, G.M., Gurvich, I.G.

Inst : ~~Not given~~

Title : Distribution of Reflected Ions by Angles and By Energies

Orig Pub : Tr. Fiz. - tekhn. in-ta, AN UzSSR, 1955, 6, 34-42

Abstract : The energy and angle distribution functions are found for the ions reflected from the surface of a solid body in the case of their normal incidents. For single collision between an ion and an atom, the angle distribution function of the ions has a  $\delta$ -like character. Upon increase of the multiplicity of the collisions, the  $\delta$ -nature of the function of distribution is lost. Bibliography, 6 titles.

Card : 1/1

SUBJECT USSR / PHYSICS  
 AUTHOR UMAROV, S.U., GURVIČ, L.G.  
 TITLE On the Theory of the Contact Metal-Semiconductors.  
 PERIODICAL Žurn.techn.fis, 26, fasc.10, 2179-2184 (1956)  
 Issued: 11 / 1956

CARD 1 / 2

PA - 1578

In the present work the volt-ampère characteristics of the contact metal-semiconductors are computed in consideration of the current passing through this contact and of the degree of ionization of the admixture centers. The computation carried out on this occasion does not take the influence exercised by the modification of the average kinetic energy of the electron gas under the effect of the electric field into account. In this case the passage of the current through the semiconductor system can be described by a system consisting of equations for the transport of electricity (diffusion equation) and a POISSON equation. This system of equations and the boundary condition at the contact are explicitly written down. A term neglected by PEKAR is here taken into account. The equations are then put into a new form by the help of a dimensionless length, field strength and concentration. The equations are further transformed and the solution can be set up in form of

an infinite power series  $y = \sum_{n=1}^{\infty} a_n x^n$ . In the case of a weak ionization of the admixture centers the coefficients  $a_n$  are numerically equal to the coefficients computed by PEKAR. However, the coefficients  $a_n$  found here are consider-

•  $\checkmark$  Zurn.techn.fis.26, fasc.10, 2179-2184 (1956) CARD 2 / 2

PA - 1578

ably more simple.

The solution

$\epsilon = \gamma + \sum_{n=1}^{\infty} a_n (p-1)^n$  found converges at  $p < 2$ , i.e. with-

in the domain of reduced concentration of carriers. On certain conditions the expression for field strength can be considerably simplified by the simple summation of the series. Also for the voltage drop in the layer near the contact an expression is written down and also for the additional potential jumps. The latter formula is considerably simplified in the case of total ionization of the admixture centers and also in the case of lacking ionization. With equal electric field strength at the contact the potential jump in the semiconductors with ionized admixture centers is considerable, i.e. a thousand and even ten thousand times greater. This is a consequence of the fact that the space charge layer in the semiconductors with ionized admixture centers extends to a far greater depth than in a semiconductor with little ionized admixtures. This is also confirmed by computations. Thus, blocking layers of great extent (which are able to warrant a sufficiently great voltage drop with inverse direction) can occur only in semiconductors with mostly ionized admixture centers. The semiconductors used in engineering (Ge, Se, Si) possess these properties.

INSTITUTION:

USSR/Electricity - Semiconductors

G-3

Abs Jour : Ref Zhur - Fizika, No 1, 1958, 1317

Author : Gurvich, L.G., Umarov, S.U.

Inst : "

Title : Effect of Surface Charges on the Properties of the Contact  
Between a Metal and a Semiconductor.

Orig Pub : Izv. AN UzSSSR, ser. fiz.-matem. n., 1957, No 1, 43-51

Abstract : A system of differential equations is written for the determination of the non-equilibrium concentration of the carriers, for the currents, and for the electric fields: diffusion equations for the currents, continuity equation, and the Poisson equation. The boundary conditions are determined from the quality of the differences in the carrier flux to the current flowing through the contact. The conditions are written for the case of free and completely filled surface band. The equations are solved in the linear approximation for the region where there is no

Card 1/2

UMAROV, S.U., akademik; KHAYDAROVA, S.

On the theory of heat transfer and electricity in semiconductors.  
Dokl. AN Uz. SSR no.10:11-16 '57. (MIRA 11:5)

1. Fiziko-tehnicheskii institut AN UzSSR. 2. AN UzSSR (for Umarov).  
(Semiconductors)

KASATKIN, A.G., doktor tekhn. nauk; DYTNERSKIY, Yu.I., kand. tekhn. nauk;  
UMAROV, S.U.

Calculating columns with fall-through plates. Khim. prom. no.3:  
166-173 Ap-My '58. (MIRA 11:6)

1. Moskovskiy khimiko-tekhnologicheskoy institut im. D.I.  
Mendeleeva.  
(Plate towers)



SOV/68-58-9-11/21

AUTHORS: Dytnerskiy, Yu.I. (Candidate of Technical Science),  
S.U. Umarov and I.I. Kulik

TITLE: A New Apparatus for Intensification of Heat and Mass  
Exchange Processes (Novyy apparat dlya intensifikatsii  
protssessov teplo- i massoobmena)

PERIODICAL: Koks i Khimiya, 1958, Nr 9, pp 43-44 (USSR)

ABSTRACT: The principle of operation of a foam tube column (Fig) is outlined. It consists of closely packed vertical tubes enclosed in a column. A gaseous phase is introduced into the bottom of the column and through a distributor passes upwards through the tubes. A liquid scrubbing phase is introduced at the top of the column through a side inlet and passes down through the tubes forming a foam with the vapour phase. As the foam moves downwards through the tubes the separation of the gas and liquid takes place. The liquid phase leaves the column through hydraulic seal, while the gas leaves through the outlet at the top of the column. The efficiency of the column (75 mm dia, 1200 mm high, containing 38 tubes 9 mm in dia and 670 mm high) was

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SOV/68-58-9-11/21

A New Apparatus for Intensification of Heat and Mass Exchange Processes

tested on the process of purification of coke oven gas from hydrogen sulphide by the arsenical-soda solution. Mean results are given in the table; the efficiency of the column was found to be 130 - 180 times higher than that of works' scrubbers.

There are 1 table, 1 figure and 6 references (4 Russian, 2 English)

ASSOCIATION: Moskovskiy Khimiko-tehnologicheskii Institut im. D.I. Mendeleeva, and Moskovskiy koksogazovyy zavod (Moscow Institute of Chemical Technology imeni D.I. Mendeleev, and Moscow Coke-Gas Works)

Card 2/2

**AUTHOR:** Umarov, S.U., Professor; President SOV/26-59-1-14/34

**TITLE:** For a Close Tie Between Science and Production (Za tesnuyu svyaz' nauki s proizvodstvom)

**PERIODICAL:** Priroda, 1959, Nr 1, pp 34-36 (USSR)

**ABSTRACT:** The AS of the Tadzhik SSR is of very recent origin and such scientific departments as the Institut vodnykh problem (Institute of Water Problems), Institut astrofiziki (Institute of Astrophysics), Institut seysmostoykogo stroitel'stva i seysmologii (Institute of Earthquake-proof Building and Seismology), the Otdel fiziki i matematiki (Department of Physics and Mathematics), and other branches have been reorganized now. The opening and exploitation of lead, zinc, wolfram, antimony, mercury, bismuth, and arsenic deposits in the Republic are a result of its Academy's scientific work. Other natural riches now being exploited include fluorspar, celestine, common salt, rock crystal, optical fluorite, mica, asbestos, hard coal and lignite, oil, natural gas and oil shale. The mining and construction-material industries are being developed correspondingly. Due to the scientific progress of agri-

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SOV/26-59-1-14/34

For a Close Tie Between Science and Production

culturists and biologists, the cotton yield per hectare was increased from 1800 kg in 1940 to 2800 kg in 1958. New forage grasses have been successfully planted and new kinds of livestock introduced. The new 7-Year Plan provides for the development of the production potential of the Vakhsh and Zeravshan Valleys and adjacent areas and the melioration and irrigation of the uplands of the Leninabad Oblast'. In the Vakhsh Valley the production of fine-fiber cotton was 160,000 tons in 1958. Its cotton-bearing areas are being expanded, subtropical and essential-oil plants, fruit and grapes acclimatized, and livestock-breeding has been started. Oil, natural gas, coal, salt, phosphorite and other mineral resources have also been traced. The Zeravshan Region will soon become one of the principal centers of the metallurgical and fuel industries of the Republic, due to its raw materials, such as coking coal, non-ferrous and rare metals. The water resources of the Leninabad Oblast' with its Kayrakkum and Farkhad GES's and the gigantic Kayrakkum water reservoir on the Syr-Dar'ya river will provide cheap electric power to be used for

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SOV/26-59-1-14/34

For a Close Tie Between Science and Production

conveying enough water to irrigate the **Sangarskiy and Dal'verzinakiy** Uplands. Careful study is to be devoted to the magmatism and metallogeny of Central and North Tadzhikistan and Darvaz, where numerous deposits of non-ferrous and rare metals and mineral deposits were discovered. In addition to research on cosmogony, the study of comets and meteors and the structure of the upper layers of the earth's atmosphere, the Republic's Academy will be particularly concerned with functional methods in mathematical physics and the dynamic problems of the elasticity theory, spectral and X-ray structural analysis, kinetic processes in semiconductor devices, and large-scale introduction of the latest methods of applying radioactive isotopes in industry and agriculture. For several years the Pamirskaya biologicheskaya stantsiya (Pamir Biological Station) and the **Khorogskiy** botanicheskiy sad (**Khorog** Botanical Garden) have conducted interesting experiments on agricultural possibilities in the climatically unfavorable mountain regions. In the near future, 150,000 more hectares will be cultivated for cotton production. Detailed mapping and description of all regions of the Republic will follow soon.

3  
Card 3/a

ASSOCIATION: Academy of Sciences of the Tadzhik SSR, Stalinabad

UMAROV, Sultan Umarovich; MOSSTEPANENKO, M.

[Lenin and the development of modern physics] Lenin i  
razvitie sovremennoi fiziki. Stalinabad, Tadzhikgosizdat,  
1960. 249 p. (MIRA 15:4)  
(Lenin, Vladimir Il'ich, 1870-1924)  
(Physics)

KELDYSH, M.V.; PALLADIN, A.V.; KUPREVICH, V.F.; ABDULLAYEV, Kh.M.; SATPAYEV, K.I.; MUSKHELISHVILI, N.I.; MAMEDALIYEV, Ya.G.; MATULIS, Ya.Ya.; GROSUL, Ya.S.; PLAUDE, K.K.; KARAKHEYEV, K.K.; UMAROV, S.U.; AMBARTSUMYAN, V.A.; BATYROV, Sh.B.; EYKHfel'd, I.G. [Eichfeld, J.]

Comments by presidents. Nauka i zhizn' 28 no.10:2-17 0 '61.  
(MIRA 15:1)

1. Prezident Akademii nauk SSSR (for Keldysh).
2. Prezident Akademii nauk Ukrainskoy SSR (for Palladin).
3. Prezident Akademii nauk Belorusskoy SSR (for Kuprevich).
4. Prezident Akademii nauk Uzbekskoy SSR (for Abdullayev).
5. Prezident Akademii nauk Kazakhskoy SSR (for Satpayev).
6. Prezident Akademii nauk Gruzinskoy SSR (for Muskhelishvili).
7. Prezident Akademii nauk Azerbaydzhanskoy SSR (for Mamedaliyev).
8. Prezident Akademii nauk Litovskoy SSR (for Matulis).
9. Prezident Akademii nauk Moldavskoy SSR (for Grosul).
10. Prezident Akademii nauk Latviyskoy SSR (for Plaude).
11. Prezident Akademii nauk Kirgizskoy SSR (for Karakeyev).
12. Prezident Akademii nauk Tadzhikskoy SSR (for Umarov).
13. Prezident Akademii nauk Armyanskoy SSR (for Ambartsumyan).
14. Prezident Akademii nauk Turkmenkoy SSR (for Batyrov).
15. Prezident Akademii nauk Estonskoy SSR (for Eykhfel'd).

(Russia--Economic conditions) (Research)

UMAROV, U.

Raised ground water level in the northwestern part of the  
Golodnaya Steppe. Vop. geol. Uzb. no.3:159-163 '62.

(MIRA 16:6)

(Golodnaya Steppe---Water, Underground)



ABUTALIYEV, F.B.; UMAROV, U.; ARTYKOVA, N.

Calculating the prognosis of the level changes of underground  
waters using electronic computers. Uzb.geol.zhur. 6 no.4:  
83-87 '62. (MIRA 15:9)

1. Institut geologii i inzhenernoy geologii AN UzSSR.  
(Water, Underground)  
(Electronic digital computers)

UMAROV, Ye.

Improvement of land drainage and prospects for the development  
of cotton growing in the Khorozm Oasis. Izv. AN Azerb.SSR. Ser.  
geol.-geog.nauk i nefti no.3:105-115 '63. (MIRA 16:11)

UMAROV, Ye.

Development of animal husbandry in the Khorezm Oasis. Izv. AN  
Azerb. SSR. Ser. geol.-geog. nauk i nefti no.6:33-43 '63.  
(MIRA 18.3)

UMAROV, Ye.

Development and distribution of agriculture in the Khorezm Oasis.  
Nauch. trudy TashGU no.251. Trudy Nauch.-issl. otd. Geog. fak.no.3:  
52-60 '64. (MIRA 18:3)

S/263/62/000/011/007/022

1007/1207

AUTHOR: Umarov, Yu. R.

TITLE: A device for studying the behavior of mechanical systems under the action of dynamic load

PERIODICAL: Referativnyy zhurnal, otdel'nyy vypusk. 32. Izmeritel'naya tekhnika, no. 11, 1962, 21-22, abstract 32.11.160. "UzSSR Fanlar Akad. akhboroti, Izv. AN UzSSR". Ser. tekhn. n.", no. 5, 1961, 30-39

TEXT: Description is given of a photoelectric device for recording the curve of reaction of a definite mechanical system, in the form of an oscillation accelerogram. The device works on the self-modeling principle. The electric simulating-model of the mechanical system with one degree of freedom is subjected to an external electromotive force, whose intensity varies proportional to the intensity of acceleration of rapidly fluctuating processes. The external mechanical action recorded on the accelerogram, is transformed by a photoelectric convertor into an electromotive force of the electric system. From model characteristics varying under external action, it is possible to infer on the behavior of the mechanical system investigated under the effect of rapidly changing load and hence to plot spectral curves of the external action. The device permits the obtaining of spectral curves of the effect of vibrations on a mechanical system having a certain range of natural attenuation. Thus, for instance, the method permits the recording of earthquake curves, showing intensity and distance from the center of the earthquake as well as the period and attenuation of vibrations of the structure. There are 4 figures and 16 references.

[Abstracter's note: Complete translation.]

Card 1/1

S/167/61/000/005/003/003  
D249/D302

Umarov, Yu. R.  
An instrument  
mechanical

rov, Yu. R.  
An instrument for investigating the behavior of me-  
chanical systems under dynamic loads  
Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya tekhn-  
icheskikh nauk, no. 5, 1961, 30-39  
tion of a photoelectric analyzer for evaluating the  
spectrum used in determining earthquake stresses in  
described. This design is based on the following  
celerogram record moving in front of a photoelec-  
te an L-C oscillating circuit with fluctuations-  
oscillations being measured with variable tun-  
a fundamental mathematical relations for oscil-  
ve degree of freedom, the author describes  
film-driving mechanism together with its  
an and gives a fuller account of the fac-

29651  
S/167/61/000/005/003/003  
D249/D302

2,6180  
AUTHOR:

Umarov, Yu. R.

TITLE:

An instrument for investigating the behavior of mechanical systems under dynamic loads

PERIODICAL:

Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya tekhnicheskikh nauk, no. 5, 1961, 30-39

TEXT: The design of a photoelectric analyzer for evaluating the acceleration spectrum used in determining earthquake stresses in structures is described. This design is based on the following principle: An accelerogram record moving in front of a photoelectric cell transforms the accelerations into voltage fluctuations which in turn excite an L-C oscillating circuit with variable tuning, the resulting oscillations being measured oscillographically. After a review of the fundamental mathematical relations for oscillating systems with one degree of freedom, the author describes briefly the accelerogram film-driving mechanism together with its associated optical system and gives a fuller account of the fac-

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D249/D302

An instrument for investigating ...

tors governing the choice of a suitable photocell. Two types of photocell were available; the gas-filled oxygen-cesium and the vacuum cesium antimonate cell. The latter was selected because of its better long-term stability. The light sensitivity of the cell was 125  $\mu$ A/lumen. Photomultipliers were not regarded as suitable for the purpose although their superiority with respect to light sensitivity was realized. The electronic circuit, to which a photo-signal is applied consists of a cathode follower, followed by a high gain d.c. amplifier, second cathode follower, and the L-C oscillating analog circuit with variable capacitance. The voltage across the capacitor is taken to the oscillograph via yet another cathode follower. Calculation of the L-C circuit is as follows. With the actual earthquake frequencies varying between 0.5 and 5 c/s, the time scale of the existing accelerograms of 1 sec/cm and with the necessary inductor Q-factor of 20-30, the required values of L and C become impractically large. In order to reduce them, the speed of the moving film is increased to 60 cm/sec which gives a scale factor of 60. With this scale factor and for

X

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D249/D302

An instrument for investigating ...

a fixed value of  $L = 5.6$  Henry; the resonant frequency range of the circuit becomes 30 - 300 c/s and that of the capacitance 0.05 - 5  $\mu F$ . There are 4 figures and 16 references: 12 Soviet-bloc and 4 non-Soviet-bloc. The references to the four most recent English-language publications read as follows: M. A. Biot, A mechanical analyzer for the prediction of earthquake stresses, Bulletin of the Seismological Society of America, 1941; W. G. Housner, G. D. McCann, The analysis of strong-motion earthquake records with the electric analog computer, Bulletin of the Seism. Soc. of America, 1948; G. W. Housner, Behavior of structures during earthquakes, Journal of the Engineering Mechanics, October 1959; J. Markus, Electronic circuits in engineering, 1954.

ASSOCIATION: Institut mekhaniki AN UzSSR (Institute of Mechanics of the AS UzbekSSR) X

SUBMITTED: July 1, 1960

Card 3/3

UYAROV, G.

UYAROV, G.: "Methods and lines of pre-sowing sorting of fuzzy and clinically deformed cotton seeds with various sowing lines." Min Higher Education USSR. Tashkent Agricultural Inst. Tashkent, 1956. (Dissertation for the Degree of Candidate in Agricultural Science.)

'Knishnaya letopis', No. 30, 1956. Moscow.

ACCESSION NR: AP4644798

S/0166/64/000/003/0075/0076

AUTHOR: Klv, A. Ye., Umarova, F. T.

TITLE: The energy of displacement of the nodal atoms in crystals of iron

SOURCE: AN UzSSR. Izvestiya. Seriya fiziko-matematicheskikh nauk, no. 3, 1964, 75-76

TOPIC TAGS: iron, defect formation, displacement, atomic displacement, electron escape, iron crystal, elastic displacement

ABSTRACT: The authors point out that determination of the threshold energies for the formation of elastic displacements of atoms is important for a clear explanation of the processes underlying defect formation. The present paper is concerned with determining the region of elastic displacement of atoms in iron crystals, in relation to the speed and energy of electrons escaping from these displaced atoms. The basic result is that if  $p(t)$  is the probability of a displacement when electrons escape with energy  $t$  (measured in Mev), and  $\sigma_r$  is the region of transmission of energy to the atom by the electron in the interval  $t, t+dt$ , then the region of atomic displacement is given by

(1)

$$\sigma_d(E) = \int_{E_d}^{E_m(E)} p(t) \sigma_r(t) dt$$

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ACCESSION NR: AP4044798

This result agreed well (within 5-7%) with observed displacements (see Fig. 1. in the Enclosure). Orig. art. has: 1 figure and 4 formulas.

ASSOCIATION: Institut yadernoy fiziki AN Uz SSR (Institute of Nuclear Physics, AN Uz SSR)

SUBMITTED: 01Mar63

ENCL: 01

SUB CODE: NP

NO REF SOV: 000

OTHER: 002

Card 2/3

KIV, A.Ye.; UMAROVA, F.T.

Energy of heteroatom displacement in iron crystals. Izv. AN Uz.  
SSR Ser. fiz.-mat. nauk 8 no.3:75-76 '64.

(MIRA 17:10)

1. Institut yadernoy fiziki AN UzSSR.

ACC NR: AP6036962

(A, N)

SOURCE CODE: UR/0181/66/008/011/3225/3231

AUTHOR: Gerasimov, A. B.; Konovalenko, B. M.; Ryvkin, S. M.; Umarova, Kh. F.; Yaroshetskiy, I. D.

ORG: Physicotechnical Institute im. A. F. Ioffe, AN SSSR, Leningrad (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: Photoelectret state in silicon with radiation defects

SOURCE: Fizika tverdogo tela, v. 8, no. 11, 1966, 3226-3231

TOPIC TAGS: photoelectret, crystalline silicon, radiation effect

ABSTRACT: The photoelectret state (PS) and the dependence of its properties on the concentration of free carriers and the concentration of local levels in the forbidden band were studied on two groups of n- and p-type silicon samples with different positions of the Fermi level after irradiation with fast electrons (which produced radiation defects). The dependence of dark polarization on the time of application of the polarizing voltage and its magnitude was measured, this being one of the chief characteristics of PS. Differences in the PS of the two groups of samples were also manifested in the persistence of polarization. The spectral selectivity of the PS was also determined. Analysis of the spectral curves showed characteristics corresponding to certain local levels of radiation defects; the curves break off abruptly in the shortwave range on passing to bipolar excitation, starting at quantum energies at

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ACC NR: AP6036962

which the formation of minority carriers is possible. The results of the study of PS during bipolar excitation are interpreted in the light of the substantial role played by optical charge exchange between impurity centers in the observed effect. Authors take this opportunity to thank I. M. Kotina for her assistance. Orig. art. has: 7 figures.

SUB CODE: 20/ SUBM DATE: 07Apr66/ ORIG REF: 009/ OTH REF: 001

Card 2/2

100000-57 ENT(L)/ENT(M)/ENT(L)/EPI TJP(e) AT/JD

ACC No

AP6033561

SOURCE CODE: UR/0181/66/008/010/2994/2998

AUTHOR: Gerasimov, A. B.; Konovalenko, B. M.; Kotina, I. M.; Umarova, Kh. F.

ORG: Physicotechnical Institute imeni A. F. Ioffe AN SSSR, Leningrad (Fiziko-tehnicheskii institut) AN SSSR

TITLE: Kinetics of bipolar impurity photoconductivity of silicon with radiation defects

SOURCE: Fizika tverdogo tela, v. 8, no. 10, 1966, 2994-2998

TOPIC TAGS: photoconductivity, bipolar photoconductivity, radiation, radiation defect, conductivity

ABSTRACT: Silicon samples with radiation defects at  $T = 77K$  were observed to be characterized by distinctive kinetics in the increase of their impurity photoconductivity. An explanation is offered for this phenomenon, which is shown to be related to the bipolarity of impurity excitation, and an approximate computation is made of the kinetics of inverse overcharge for a case of low level excitation. The

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L 09899-67

ACC NR: AP6033561

cross-section of hole capture at the radiation defect level  $E_c - 0.40$  ev is determined. Orig. art. has: 7 formulas and 5 figures. [Authors' abstract]

SUB CODE: 20/ SUBM DATE: 28Mar66/ ORIG REF: 004/ OTH REF: 002/

Card 2/2 *ml*

УМНИКОВА, Н. С., . . . . .

Gynecology

Mechanism of development of pseudopregnancy. Akush. i gin. no. 5, 1952.

MONTHLY LIST OF RUSSIAN ACCESSIONS, LIBRARY OF CONGRESS, DECEMBER 1952. UNCLASSIFIED

UMAROVA, Kh. S.

Brucellosis and the female generative organs. Dokl. AN Uz. SSR  
no.9:71-73 '57. (MIRA 11:5)

1. Tashkentskiy gosudarstvennyy meditsinskiy institut. Predstavleno  
akademikom AN UzSSR S.Yu. Yunusovym.  
(BRUCELOSIS) (GENERATIVE ORGANS, FEMALE)

UMAROVA, Kh.S.

Hormone profile during the menstrual cycle in female  
brucellosis patients. Izv. AN Uz. SSR. Ser. med. no. 5: 42-46  
'59. (MIRA 15:3)

1. Tashkentskiy gosudarstvennyy meditsinskiy institut.  
(BRUCELOSIS) (MENSTRUATION) (HORMONES)

UMAROVA, Kh. S., Cand Med Sci -- (diss) "Effect of various clinical forms of brucellosis on the condition of the genitalia of women ." Tashkent, 1960. 14 pp; (Ministry of Public Health Uzbek SSR, Tashkent State Medical Inst); 300 copies; price not given; (KL, 25-60, 140)

UMAROVA, M.K.

Case of the development of hypothyreosis in a patient with  
hyperthyreosis. Med. zhur. Uzb. no.6:70 Je '60. (MLA 15:2)

1. Iz endokrinologicheskogo otdeleniya Tashkentskogo gorodskoy  
bol'nitsy No.10 (glavnyy vrach - S.S.Salikhov).  
(HYPERTHYROIDISM)

STOLBOVA, A.; UMAROVA, M.U.; UVAROVA, A.I.; VISHNEVETSKAYA, Ye.A.  
TETENKO, N.I., meditsinskaya sestra.

Nurses' councils. Med. sestra 22 no.6:42-45 Je'63.(MIRA 16:9)

1. Predsedatel' Soveta meditsinskikh sester Vladimirskoy oblasti bol'nitsy. Detskaya bol'nitsa No.3 Tashkentskoy zheleznoy dorogi (for Umarova).
  2. Glavnyy vrach Detskogo kostno-tuberkuleznogo sanatoriya No.2, Dnepropetrovsk (for Uvarova).
  3. Detskoye otdeleniye Krasnodarskoy krayevoy klinicheskoy bol'nitsy imeni prof. S.V.Ochapovskogo (for Tetenko).
- (NURSES AND NURSING)

YUNUSOVA, Kh.A.; LOGINOVA, N.S.; UMAROVA, R.F.; KATSNEL'SON, R.A.

Candidomycosis of the oral cavity and diphtheria. Izv.AN  
Uz.SSR.Ser.med. no.5:13-19 '58. (MIRA 12:5)

1. Tashkentskiy gosudarstvennyy meditsinskiy institut, Klinika  
detskikh bolezney i kafedra mikrobiologii.  
(MONILIASIS) (DIPHTHERIA--BACTERIOLOGY)



KATSNEL'SON, R.A.; UMAROVA, R.F.; IQAMBERDYIEVA, D.I.

Serological diagnosis of diphtheria. Med.shur.Uzb. no.1:38-43 Ja '99.  
(MIRA 13:2)

1. Iz kafedry mikrobiologii (zaveduyushchiy - prof. P.F. Samsonov)  
i kliniki detskikh infektsionnykh bolezney (zaveduyushchiy - prof.  
Kh.A. Yunusova) Tashkentskogo gosudarstvennogo meditsinskogo insti-  
tuta.

(DIPHTHERIA)

LOGINOVA, N.S.; UMAROVA, R.F.; KATSNEL'SON, R.A.

Materials on the etiopathogenesis of toxic diphtheria. Med. zhur.  
Uzb., no.3:44-47 Mr '61. (MIRA 14:5)

1. Iz kafedra mikrobiologii (zav. - prof. P.F.Samsonov) i kliniki  
detskikh infektsiy (zav. - prof. Kh.A.Yunusova) Tashkentskogo  
gosudarstvennogo meditsinskogo instituta.  
(DIPHTHERIA)

KUDINOVA, V.S.; SUVOROV, B.V.; UMAROVA, R.U.

Oxidation of organic compounds. Report No.34: Catalytic vapor  
phase oxidation of n-propylbenzene, n-butylbenzene, and some  
of their derivatives. Trudy Inst.khim.nauk AN Kazakh.SSR 8:157-  
162 '62. (MIRA 15:12)

(Benzene)

(Oxidation)

MUSAYEV, K.Yu.; UMAROVA, Sh.

Effect of watering on the development and distribution of algae  
in cotton fields. Uzb. biol. zhur. 6 no.3:30-34 '62. (MIRA 15:6)

1. TashkentSKIY gosudarstvennyy universitet imeni V.I. Lenina.  
(UZBEKISTAN--ALGAE)  
(UZBEKISTAN--COTTON--IRRIGATION)

ACC NR: AR6033654

(N)

SOURCE CODE: UR/0417/66/000/009/0025/0025

AUTHOR: Umarova, Sh, S.; Zakirov, U. B.; Kamilov, I. K.

ORG: none

TITLE: Comparative evaluation of the effects of quaternary galantamine derivatives

SOURCE: Ref. zh. Farmakologiya, khimioterapevticheskiye sredstva, toksikologiya, Abs. 9.54.155

REF SOURCE: Sb. Farmakol. alkaloidov. Vyp. 2. Tashkent, Nauka, 1965, 258-263

TOPIC TAGS: pharmacology, galantamine, alkaloid, drug effect, quaternary amine

ABSTRACT: The pharmacological effects of galantamine hydroxymethylate, hydroxyethylate, hydroxyisopropylate, hydroxybutylate, and hydroxyamylate were studied. In rabbits doses from 0.1—3 mg/kg produced constriction of the pupils, muscular fibrillation and lacrimation. Five to ten mg/kg doses caused peristaltic movements of the intestine, urination, and defecation. Eleven mg/kg doses produced death from respiratory failure. Corresponding tertiary compounds required higher doses to produce the same effects. Galantamine derivatives produced more peripheral neuro-muscular activity than galantamine hydrobroside (ater-

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UDC: 615.785.4

ACC NR: AR6033654

tiary compound). The most effective compound was galantamine hydroxymethylate which, when administered in 0.05 mg/kg doses, increased the amplitude of muscle contraction by 46%. [W.A. 50]

SUB CODE: 06/ SUBM DATE: none

Card 2/2

UMAROVA, S.I., vrach; RAYSKIY, N.S., vrach; TARTAKOVSKAYA, I., red.;  
SOKOLOVA, A., tekhn. red.

[Longevity] Dolgoletie. Tashkent, Gos.izd-vo "Sredniaia i vys-  
shaia shkola," UzSSR, 1961. 84 p. (MIRA 14:11)  
(LONGEVITY)

UMAROVA, Sh.S.; KAMILOV, I.K.; POLIYEVTSSEV, N.P.

Galanthamine hydroxymethylate and its cholinergic properties.  
Farm.alk. no.1:174-180'62. (MIRA 16:9)  
(GALANTHAMINE) (PARASYMPATHOMIMETIC AGENTS)



UMAROVA, Sh.S.; KAMILOV, I.K., POLIYEVTSSEV, N.P.

Effect of galanthamine hydroxymethylate on the action of  
arecoline and atropine. Farm.alk. 181-183'62. (MIRA 16:9)  
(GALANTHAMINE) (ARECOLINE) (ATROPINE)

UMAROVA, Sh.S.; KAMILOV, I.K.; POLIYEVITSEV, N.P.

Comparative action of galanthamine hydrobromide and hydro-  
xymethylate on neuromuscular conduction. Farm.alk. no.1:  
184-189'62. (MIRA 16.9)  
(GALANTHAMINE--PHYSIOLOGICAL EFFECT) (NEUROCHEMISTRY)  
(MUSCLE)

UMAROVA, S.U., kand.med.nauk

Long-term observations in late toxicoses of pregnancy. Zdrav.  
Tadzh. 8 no. 2:16-18 '61. (MIRA 14:4)

1. Iz kafedry akusherstva i ginekologii (zav. -- doktor med.nauk  
S.Kh. Khakimova) Stalinabadskogo medinstituta imeni Abuali ibni  
Sino.

(PREGNANCY, COMPLICATIONS OF)

UMAROVA, S.U., dotsent

Frequency of occurrence and seasonal distribution of late pregnancy  
toxemia in a dry subtropical climate. Zdrav. Tadzh. 9 no.1:30-32  
Ja-F '62. (MIRA 15:4)

(PREGNANCY, COMPLICATIONS OF)

UMAROVA, T.; KAL'CHENKO, A.; KUMIN, Ye.

News from schools. Prof.-tekh.obr. 19 no.3:32 Mr '62.

(MIRA 15:4)

1. Direktor Khodzhentskogo kovrovo-tkatskogo professional'no-  
tehnicheskogo uchilishcha No.21 imeni Titova, Tadzhijskaya SSR  
(for Umarova).

(Vocational education)

UMAROVA, T.U., aspirant

Sanitary and hygienic characteristics of school workshops  
in Tashkent. Med. zhur. Uzb. no.7:22-27 J1 '63.  
(MIRA 17:2)

1. Iz kliniki glaznykh bolezney (zav. - dotsent T.Ya.  
Kasymov) Tashkentskogo meditsinskogo instituta.

UMAROVA, V.

Water balance of a typical Sierozem used as pasture and long-  
fallow land. Nauch. trudy Tash. GU no.204:201-222 '62.  
(MIRA 17:9)

ALIYAROV, S.; UYAYEV, N.

Participation of young Azerbaijani students in the revolution of  
1905-1907 [in Azerbaijani with summary in Russian]. Dokl. AN Azerb.  
SSR 12 no.9:683-690 '56. (MIRA 9:10)  
(Azerbaijan--Revolution of 1905)



UMBERG, V.N.

Provide the paper industry enterprises with modern Soviet equipment. Bum.prom. 38 no.1:7-8 Ja '63. (MIRA 16:2)

1. Sovet narodnogo khozyaystva SSSR.  
(Woodpulp industry—Equipment and supplies)

UMBETALIN, S. U.

Umbetalin, S. U. -- "Investigations of the Conditions of Stability of the Rims of the Kounrads'kiy Open Pit Mine (With Consideration of the Mechanics of the Massif)." Acad Sci Kazakh SSR, Inst of Mining Affairs, Alma-Ata, 1955 (Dissertation for the Degree of Candidate in Technical Sciences)

SO: Knizhnaya Letopis', No. 23, Moscow, Jun 55, pp 87-104

UMBETALIN, S.U.

Investigating conditions governing the stability of the sides  
of the Kounrad open-pit mine. Vest.AN Kazakh.SSR 16 no.1:  
18-25 Ja '60. (MIRA 13:5)  
(Strip mining) (Soil mechanics)

UMBET'YAROVA, G.G.

Bicillin treatment for patients with syphilis. Zdrav. Kazakh. 21  
no.10:33-36 '61. (MLRA 15:2)

1. Iz otdela sifilidologii (zav.-kand.med.nauk M.M.Vishnyak)  
Kazakhskogo kozhno-venerologicheskogo instituta.  
(SYPHILIS) (PENICILLIN)

VISHNYAK, M. M., kand. med. nauk; UMBET'YAROVA, G. G., mlad. nauchn. sotrud.; RAKHIMOVA, G. K., mlad. nauchn. sotrud.; GUTERMAKHER, TS. M., mlad. nauchn. sotrud.; BASARGIN, P. S., mlad. nauchn. sotrud.; SHEFFER, A. R., mlad. nauchn. sotrud.

Results of bicillin therapy of syphilis in Alma-Ata. Vest. dermat. i ven. 36 no.6:57 Je '62. (MIRA 15:6)

1. Iz Kazakhskogo nauchno-issledovatel'skogo kozhno-venerologicheskogo instituta (dir. - kandidat meditsinskikh nauk M. O. Omarov)

(BICILLIN) (ALMA-ATA-SYPHILIS)

L 429-65 EWT(d) Pg-4 IJP(c)

ACCESSION NR: AR5006733

S/0044/64/000/012/BO37/BO37

19  
B

SOURCE: Ref. zh. Matematika, Abs. 12B216

AUTHOR: Umbetzhany, D. U.

TITLE: Application of the method of asymptotic approximation to the quasi-periodic oscillations of non-linear systems

CITED SOURCE: Sb. tr. soiskateley i aspirantov. K-vo vyesh. i sredn. spets. obrazovaniya KazSSR, v.1, no. 1, 1963, 104-112

TOPIC TAGS: control theory, nonlinear system, differential equation, quasi-periodic oscillation, asymptotic approximation, Fourier polynomial

TRANSLATION: The author has investigated the equation

(1)

$$\frac{d^2x}{dt^2} + \epsilon^2 x = \epsilon f\left(t, \frac{dx}{dt}\right),$$

where  $\epsilon$  is a small parameter,  $f$  - a quasiperiodic function of  $t$  with frequencies  $\nu_1$  and  $\nu_2$ , being represented by a finite Fourier polynomial, with coefficients which, in their turn, are polynomials in  $x$ ,  $\frac{dx}{dt}$ . It is shown that, for the con-

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ACCESSION NR: AR5006733

struction of a quasi-periodic solution of equation (1), one can apply the method of asymptotic determination of Krylov and Bogolyubov. For this purpose, the equation in partial derivatives

$$\nabla^2 x + u^2 x = \varepsilon f(v_1 u, v_2 u, x, \nabla x), \quad (2)$$

is investigated, where  $\nabla$  is a differential operator

$$\nabla x(u, v) = \frac{\partial x}{\partial u} + \frac{\partial x}{\partial v}. \quad (4)$$

For  $\varepsilon=0$  equation (2) has a general solution of the form

$$x = a \cos(\omega_1 u + \omega_2 v + \varphi), \quad (5)$$

where  $\omega_1 + \omega_2 = \omega$ , and  $a = a(u, v)$ ,  $\varphi = \varphi(u, v)$  are arbitrary twice differentiable functions of the difference  $u-v$ . It is assumed that resonance exists, i.e. that there do not exist integers  $n_1, n_2, m$  for which

$$n_1 \omega_1 + n_2 \omega_2 + m \omega = 0.$$

Then it is proposed to find a solution of the equation (2) in the form of the series

$$x = a \cos \varphi + \varepsilon u_1(a, \varphi, v_1 u, v_2 u) + \varepsilon^2 u_2 + \dots, \quad (3)$$

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L 39429-65

ACCESSION NR: AR5006733

where

$$\psi = u_1 u + u_2 v + \psi,$$

and the functions

$u, v$  are periodic in  $\psi, v_1, v_2, v_3, v_4$

with period  $2\pi$ . The quantities

$a$  and  $\psi$  are determined by the differential equations

$$\begin{aligned} \Delta a &= \epsilon A_1(a) + \epsilon^2 A_2(a) + \dots \\ \Delta \psi &= \epsilon B_1(a) + \epsilon^2 B_2(a) + \dots \end{aligned} \quad (6)$$

The obvious expressions for the functions  $A_1(a), B_1(a), g_1(a, \psi, v_1, v_2, v_3, v_4)$

are written down and a method of finding  $A_1, B_1, g_1$  is indicated.

The sought-for quasi-periodic solution of the former equation is obtained from the expression (3) for  $u = \psi/t$ . Yu. Ryabov.

SUB COD: MA, IE

ENCL: 00

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L 39425-65 EWT(d) Pg-4 IJP(c)  
ACCESSION NR: AR5006735

S/0044/64/000/012/B040/B040 12

SOURCE: Ref. zh. Matematika, Abs. 12B237

AUTHOR: Umhotzhanov, D. U.

TITLE: Quasi-periodic oscillations of non-linear autonomous systems

CITED SOURCE: Sb. tr. soiskately i aspirantov. M-vo vyssh. i sredn. spets. obrazovaniya KazSSR, v. 1, no. 1, 1963, 141-149

TOPIC TAGS: differential equation, linear differential equation, autonomous system, control theory, periodicity, quasiperiodic oscillation

TRANSLATION: The differential equations  $\frac{dx_s}{dt} = f_s(x_1, \dots, x_n, \alpha)$ ,  $s = 1, \dots, n$ , (1)  
are investigated, where  $f_s$  are analytic functions of the variables  $x_1, \dots, x_n$  and a small parameter  $\alpha$ , not necessarily dependent on  $t$ . It is assumed that, for  $\alpha = 0$ , the equation (1) has a quasi-periodic solution (generator)  $x_s^0 = q_s(t, \dots, t_0)$ ,  $s = 1, \dots, n$ ,  $C$   
with frequency basis  $\beta_1, \dots, \beta_n$ . The question of the existence of a quasi-periodic solution of equation (1) for  $\alpha \neq 0$  is raised. A method is used, the idea of which was

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L 394-65

ACCESSION NR: AR5006735

reported in an article by V. Kh. Kharasakhal (RZh Mat, 1962, 1B 166). He concludes that, together with (1), a system of differential equations of partial derivatives is to be investigated 
$$\frac{\partial x_s}{\partial u_1} + \dots + \frac{\partial x_s}{\partial u_m} = f_s(x_1, \dots, x_n, \alpha). \quad (2)$$

The solution of the latter equation  $x_s(u_1, \dots, u_m, \infty)$ ,  $s = 1, \dots, n$ , is periodic in the variables  $u_s$  with periods  $T_1, \dots, T_m$  respectively and represents for  $u_1 =$

periodicity of the solution of the system (1) is investigated. The conditions of analogous, known conditions on periodicity of the solution of the system (1) are investigated. Poincare. The author writes out these conditions in general form and analyzes them, which allows him to prove, in particular, the theorem: If the autonomous system (1) possesses even one quasi-periodic solution, then it possesses an entire family of such solutions. Yu. Ryabov

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ACCESSION NR: AP3005600

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AUTHOR: Umbetzhano, D. U.

TITLE: Applicability of Poincare's small parameter method in the theory of almost-periodic solutions of systems of nonlinear differential equations

SOURCE: AN KazSSR. Vestnik, no. 7, 1963, 85-88

TOPIC TAGS: differential equation, small parameter, analytic solution, almost-periodic solution

ABSTRACT: The author considers

$$\frac{dx}{dt} = f(t, x, \alpha), \quad (1)$$

where  $x = (x_1, x_2, \dots, x_n)$ ,  $f = (f_1, f_2, \dots, f_n)$  are  $n$ -dimensional vectors,  $t$  is an independent variable, and  $\alpha$  is a small parameter. He assumes that the right parts

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of (1) are analytic functions of the variables  $x$  in some region  $G$  and of the parameter  $\alpha$  for sufficiently small values of  $\alpha$ , and are continuous almost-periodic functions with respect to  $t$  with general frequency basis  $\gamma = (\gamma_1, \gamma_2, \dots, \gamma_m)$ . He formulates sufficient conditions for the existence of a unique almost-periodic solution of (1) analytic in  $\alpha$  for sufficiently small  $\alpha$ , which tends to the almost-periodic solution of the corresponding degenerate system. Orig. art. has: 19 formulas.

ASSOCIATION: none

SUBMITTED: 00

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OTHER: 001

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differential equations. Izv. AN Kazakh. SSR. Ser. fiz.-mat. nauk  
3 no.1:54-64 Ja-Apr '65. (MIRA 18:5)

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